

Psychosocial impact of chronic oral mucosal pain disorders: Associations with oral health related quality of life, anxiety, and depression

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ABSTRACT

Background: Chronic oral mucosal pain disorders, including Burning Mouth Syndrome (BMS), Oral Lichen Planus (OLP), Atypical Odontalgia, and Persistent Idiopathic Facial Pain, are debilitating conditions that significantly impair oral health-related quality of life (OHRQoL). These disorders are frequently associated with psychological distress, particularly anxiety and depression; however, studies integrating assessments of OHRQoL with psychological morbidity remain limited.

Objective: To evaluate the impact of chronic oral mucosal pain disorders on OHRQoL, anxiety, and depression, and to identify psychological predictors of impaired quality of life.

Methods: A case-control study was conducted involving 52 patients with chronic oral mucosal pain disorders and 52 age- and sex-matched healthy controls. OHRQoL was assessed using the Oral Health Impact Profile-14 (OHIP-14), and psychological distress was measured using the Hospital Anxiety and Depression Scale (HADS). Group comparisons were performed using independent t-tests and chi-square tests. Multivariable linear regression identified independent predictors of OHIP-14 scores, and receiver operating characteristic (ROC) analysis evaluated the ability of OHIP-14 to detect depression.

Results: Patients showed significantly higher OHIP-14 scores than controls (28.3 ± 6.0 vs. 11.7 ± 5.0 ; $p < 0.0001$). Clinically relevant anxiety and depression were present in 84.6% and 80.8% of patients, respectively. Anxiety and depression independently predicted poorer OHRQoL, while demographic factors and symptom duration were not significant. OHIP-14 demonstrated good diagnostic accuracy for depression (Area under the curve (AUC) = 0.85).

Conclusion: Chronic oral mucosal pain disorders (COMPd) are associated with marked impairment in quality of life and substantial psychological burden, underscoring the need for routine psychological screening in oral medicine practice.

1. Introduction

Chronic oral mucosal pain disorders—such as Burning Mouth Syndrome (BMS), symptomatic Oral Lichen Planus (OLP), Atypical Odontalgia, and Persistent Idiopathic Facial Pain—represent a significant

burden in oral healthcare due to their complex, multifactorial etiology and persistent nature. These conditions often manifest as burning sensations, discomfort, or unexplained oral pain, yet lack overt clinical signs, challenging both diagnosis and management approaches.^{1–3}

Burning Mouth Syndrome is particularly prevalent among middle-

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aged to elderly individuals, with a striking female predilection possibly reaching ratios up to 7:1.⁴ While the overall population-level prevalence of Burning Mouth Syndrome is relatively low, among postmenopausal women the prevalence may reach 10–40%, highlighting its clinical relevance in dental practice settings.⁵ Oral Lichen Planus (OLP) is a chronic inflammatory oral mucosal condition estimated to affect approximately **1% of the global population**, with prevalence ranging from **0.89% in general populations to 0.98% in clinical cohorts**.⁶ Clinically, OLP manifests with mucosal discomfort, burning, and ulceration, particularly in middle-aged adults. Importantly, OLP carries a **malignant transformation risk** of approximately **1.4%**, highlighting its status as an oral potentially malignant disorder (OPMD).⁷ These chronic pain disorders not only impair oral function but also contribute to broader psychosocial distress.

The Oral Health Impact Profile–14 (OHIP-14) is a concise yet validated instrument widely adapted to assess OHRQoL. This tool captures the multifaceted impact of oral conditions on daily functioning, emotional well-being, and social interactions.⁸ Investigations in patients with OLP and related mucosal disorders consistently reveal substantial reductions in quality of life, correlated with pain severity, anxiety, and stress.⁹

Chronic oral mucosal pain frequently coexists with psychological distress. Systematic reviews underscore high prevalence rates of anxiety and depression among individuals with chronic oral mucosal pain disorders—such as Burning Mouth Syndrome and Oral Lichen Planus—suggesting a pathophysiological basis rooted in dysregulation of psychoneuroendocrine-immune mechanisms.^{10,11}

In OLP, the mechanism of heightened emotional burden is linked to fears of malignant transformation and persistent symptomatology, with recent estimates showing anxiety and depression prevalence exceeding 50% in this patient population [54.76% and 31.19%, respectively].¹² Similarly, (BMS) has consistently been associated with mood disturbances, with anxiety disorders reported in approximately 63.7% of patients and depressive disorders in 36.3%.¹³

Although evidence consistently demonstrates a dual burden of physical and emotional symptoms in chronic oral mucosal pain disorders, several gaps persist: the **temporal dynamics** (i.e., how symptom duration affects oral health-related quality of life and psychological well-being) remain under-explored, and emerging data suggest that significant impacts may emerge early regardless of chronicity.¹⁴ Additionally, **diagnosis-specific variations**—such as differences in psychological profiles between Burning Mouth Syndrome and Oral Lichen Planus—are insufficiently characterized.¹⁵ Finally, while the **OHIP-14** is established for measuring functional impairment, its potential role as a **screening tool for underlying depression** has yet to be formally evaluated.

Although chronic oral mucosal pain disorders are frequently associated with anxiety and depression, the extent to which psychological distress independently contributes to impaired oral health-related quality of life (OHRQoL) remains unclear. Additionally, the role of symptom duration in influencing emotional outcomes has not been well defined. To address these gaps, this case-control study compares OHRQoL, anxiety, and depression between patients with chronic oral mucosal pain disorders and healthy controls, aiming to determine whether anxiety and depression independently predict OHRQoL impairment regardless of symptom duration.

2. Materials and methods

2.1. Study design and setting

This was a hospital-based case-control observational study conducted in the Department of Oral Medicine and Radiology. The primary objective was to evaluate the impact of chronic oral mucosal pain disorders on oral health-related quality of life (OHRQoL), and psychological outcomes such as anxiety and depression.

2.2. Inclusion criteria (cases)

Eligible cases met the following criteria: adults aged between 18 and 70 years; a clinical diagnosis of a chronic oral mucosal pain condition lasting at least three months; no history of psychiatric disorders; no use of psychotropic medications such as antidepressants or anxiolytics; and the ability to understand and complete the study questionnaires independently. All participants provided written informed consent before inclusion.

2.3. Exclusion criteria (both groups)

Exclusion criteria applied to both groups were designed to eliminate confounding variables. Individuals with systemic illnesses such as uncontrolled diabetes mellitus, hypothyroidism, or fibromyalgia were excluded due to their known association with chronic pain and mood disturbances. Patients with a history of head and neck malignancy, radiation therapy, or chemotherapy were also excluded. Additional exclusion criteria included use of psychotropic or neuropathic pain medications in the past six months (e.g., antidepressants, anxiolytics, or antiepileptics), active tobacco or alcohol dependence, pregnancy or lactation, and cognitive impairment that could interfere with informed consent or reliable questionnaire completion.

2.4. Study population and matching criteria

The study included 104 participants divided equally into two groups: 52 patients with clinically diagnosed chronic oral mucosal pain disorders (case group) and 52 healthy individuals (control group). Age- and sex-matching was implemented using a strict matching criterion of ± 2 years for age and identical sex distribution. Controls were recruited from hospital staff, attendants, and community volunteers with no history of chronic oral pain, mucosal pathology, or psychiatric illness.

2.5. Case group

Patients in the case group were clinically diagnosed with one or more chronic oral mucosal pain disorders, including Burning Mouth Syndrome (BMS), symptomatic forms of Oral Lichen Planus (OLP) such as erosive or atrophic variants, Atypical Odontalgia, or Persistent Idiopathic Facial Pain. Diagnoses were confirmed through detailed clinical evaluation by two experienced oral medicine consultants. The diagnostic criteria for BMS were based on the International Classification of Headache Disorders, 3rd edition (ICHD-3), which defines BMS as an intraoral burning or dysesthetic sensation recurring daily for more than 2 h per day over a duration of at least three months, in the absence of clinically evident mucosal abnormalities or systemic causes.¹⁶ Diagnostic confirmation of OLP was established in accordance with the World Health Organization (WHO) Classification of Head and Neck Tumours, which requires both characteristic clinical presentation (such as reticular, atrophic, or erosive patterns) and histopathological confirmation of a band-like lymphocytic infiltrate at the epithelial-connective tissue interface and basal cell liquefaction.¹⁷

All included patients had symptom duration exceeding three months and no identifiable local or systemic etiologies contributing to their pain. Exclusion of alternative diagnoses was based on clinical examination, medical history, and, when indicated, laboratory investigations or histopathology.

2.6. Control group

The control group comprised healthy individuals, matched to the case group by age and gender, who were free from any chronic oral mucosal conditions or pain disorders. These participants were recruited from among patient attendants, hospital staff, or community volunteers. None of the controls had a history of systemic diseases, psychiatric

illness, or medication use that could confound psychological or oral health assessments.

2.7. Blinding and bias control

Given the observational case-control design of the study, complete double blinding was not feasible. However, a **partial blinding strategy** was implemented to minimize assessment and analytical bias.

Clinical diagnosis and group allocation (case or control) were performed by two calibrated oral medicine specialists with over five years of clinical experience. Owing to the nature of the conditions studied, these examiners were necessarily aware of the participants' clinical status to ensure diagnostic accuracy.

To reduce information and observer bias, **questionnaire administration and scoring** of the Oral Health Impact Profile-14 (OHIP-14) and Hospital Anxiety and Depression Scale (HADS) were conducted by an **independent trained researcher who was blinded to group allocation and clinical diagnosis**. This researcher had no access to participants' medical records or diagnostic details at the time of data collection. Participants were explicitly instructed not to disclose their diagnosis during questionnaire completion.

Furthermore, **data entry and statistical analysis were performed using anonymized and numerically coded datasets**, with group identities concealed from the analyst. This ensured that outcome assessment and inferential analyses were conducted without knowledge of participant classification.

Although diagnostic blinding was not possible, this multi-level blinding approach ensured that **psychological outcome assessment and statistical interpretation were unbiased**, thereby strengthening the internal validity of the study.

2.8. Sample size calculation

The sample size was estimated based on the **primary outcome**, i.e., the difference in **OHIP-14 total score** between cases and controls. A **minimum clinically meaningful difference (Δ) of 5 points** in OHIP-14 was considered relevant for detecting a clinically important impairment in OHRQoL. The calculation assumed equal group sizes and used the standard formula for comparing two independent means:

$$n = \frac{2(Z_{\alpha/2} + Z_{\beta})^2 \sigma^2}{\Delta^2}$$

Where:

- $Z_{\alpha/2} = 1.96$ (two-sided $\alpha = 0.05$)
- $Z_{\beta} = 0.84$ (80% power)
- $\sigma = 8.5$ (pooled SD of OHIP-14 total score, derived from prior OHIP-14 studies in chronic oral pain populations)^{2,5,18}
- $\Delta = 5$ (expected mean difference in OHIP-14 score)

Substituting:

$n = \frac{2(1.96 + 0.84)^2 (8.5)^2}{5^2} = \frac{2 \times 7.84 \times 72.25}{25} = \frac{1132.7}{25} = 45.3$ Thus, **46 participants per group** were required. To account for an anticipated **~10% non-response/incomplete questionnaire rate**, the sample size was inflated to **52 participants per group**, resulting in a total sample size of **104**.

2.9. Assessment tools

1. Oral Health Impact Profile (OHIP-14)

The OHIP-14 is a widely used, psychometrically validated instrument designed to assess the social impact of oral health conditions on quality of life. It evaluates seven conceptual domains: functional limitation, physical pain, psychological discomfort, physical disability,

psychological disability, social disability, and handicap. Each domain is represented by two items, with a total of 14 questions. Responses are recorded on a 5-point Likert scale ranging from 0 (never) to 4 (very often), generating a total score ranging from 0 to 56. Higher scores reflect greater impairment in oral health-related quality of life (OHR-QoL), making it a sensitive tool for assessing the functional, emotional, and social consequences of oral conditions, particularly in chronic pain settings.¹⁹

2. Hospital Anxiety and Depression Scale (HADS)

The HADS is a validated screening instrument originally developed to detect states of anxiety and depression in patients attending medical, non-psychiatric clinics. It comprises 14 items—seven related to anxiety Hospital Anxiety and Depression Scale, Anxiety subscale (HADS-A) and seven to depression Hospital Anxiety and Depression Scale, Depression subscale.

(HADS-D). Each item is scored from 0 to 3, allowing each subscale a range of 0 to 21. Scores of 0–7 are considered normal, 8–10 indicate borderline abnormal (possible case), and scores ≥ 11 suggest clinically relevant anxiety or depression. A cut-off score of ≥ 8 is commonly used in research to identify probable cases. The HADS has been shown to perform well across various medical populations and is particularly useful in studies assessing psychological comorbidity in chronic illness.²⁰

2.10. Data collection procedure

Data collection was performed in a standardized and systematic manner to ensure consistency and accuracy. Each participant was evaluated in a single visit after eligibility confirmation through detailed clinical examination and medical history. Written informed consent was obtained from all participants prior to enrollment.

A structured clinical examination and case history were recorded for each subject. Participants then completed the Oral Health Impact Profile-14 (OHIP-14) and Hospital Anxiety and Depression Scale (HADS) questionnaires under the supervision of a trained research assistant to ensure completeness of responses and clarify any procedural queries. The questionnaires were self-administered in a quiet environment to minimize external influences.

For the case group, additional clinical information—including symptom duration (in months) and pain intensity—was collected. Pain intensity was rated using a 10-point Visual Analogue Scale (VAS), where 0 indicated no pain and 10 represented the most severe pain imaginable.

All responses were reviewed for completeness, coded anonymously, and subsequently entered into a secure database for statistical analysis.

2.11. Statistical analysis

Data were entered into Microsoft Excel and analyzed using SPSS version 26.0 (IBM Corp., Armonk, NY). Descriptive statistics were computed for demographic and clinical characteristics. Before conducting parametric tests (e.g., t-tests, regression analysis), the data were evaluated for **normality** using the Shapiro-Wilk test and for **homogeneity of variances** using Levene's test. Group comparisons were conducted using independent samples t-tests (for continuous variables) and Chi-square tests (for categorical variables). Pearson's correlation was used to evaluate associations between symptom duration and outcome scores. Multivariable linear regression was performed to identify predictors of OHIP-14 scores. A Receiver Operating Characteristic (ROC) curve was generated to assess the accuracy of OHIP-14 in detecting clinically relevant depression (HADS-D ≥ 8), and the area under the curve (AUC) was reported. A two-sided p-value < 0.05 was considered statistically significant.

3. Results

3.1. Participant characteristics

Table 1 summarizes the demographic profile of the study population indicating successful age and gender matching between the case and control groups. The mean age of participants was comparable across both groups (cases: 45.2 ± 8.6 years; controls: 44.9 ± 9.1 years), with age ranges spanning from the early 30s to mid-60s. Gender distribution was balanced, with a slightly higher proportion of females. Among the 52 cases with chronic oral mucosal pain disorders, Burning Mouth Syndrome (BMS) was the most prevalent diagnosis, affecting 38.5% of participants, followed by Symptomatic Oral Lichen Planus (26.9%), Atypical Odontalgia (19.2%), and Persistent Idiopathic Facial Pain (15.4%). This distribution indicates a higher burden of conditions with neuropathic and inflammatory components within the study population.

3.2. Prevalence of anxiety and depression

Table 2 presents a striking finding: 84.6% of the cases exhibited clinically significant anxiety ($\text{HADS-A} \geq 8$), compared to only 30.8% in controls ($p < 0.0001$). Similarly, depression was prevalent in 80.8% of cases versus 23.1% in controls ($p < 0.0001$). These statistically significant differences underscore the profound psychological impact of chronic oral mucosal pain disorders and support the hypothesis that these conditions are associated with elevated emotional distress.

3.3. Comparison of mean scores

Table 3 demonstrates that the mean OHIP-14 score was significantly higher in cases (28.3 ± 6) than in controls (11.7 ± 5), with a mean difference of 16.6 (95% CI: 14.2–19.0; $p < 0.0001$), indicating substantial impairment in oral health–related quality of life among patients. Likewise, both HADS-Anxiety and HADS-Depression scores were significantly elevated in cases, with mean differences of 4.1 points each (95% CI: 3.1–5.1; $p < 0.0001$). These results clearly show that affected individuals experience not only functional impairment but also substantial psychosocial distress.

3.4. Correlation with symptom duration

The scatterplot examining the relationship between symptom duration and OHIP-14 scores (Fig. 1) demonstrates a widely dispersed distribution of data points without a clear linear trend. The Pearson's correlation analysis yielded a very weak and statistically non-significant association ($r \approx 0.05$, $p > 0.05$), indicating that the duration of chronic oral mucosal pain symptoms does not meaningfully influence patients' perceived oral health–related quality of life.

3.5. Diagnosis-specific comparisons

Table 4 provides a breakdown of mean scores by specific diagnosis

Table 1
Participant characteristics.

Parameter	Cases (n = 52)	Controls (n = 52)
Mean Age (years)	45.2 ± 8.6	44.9 ± 9.1
Age Range (years)	30–65	29–64
Gender Distribution	Balanced	Balanced
Distribution of Chronic Oral Mucosal Pain Disorders		Not Applicable
• Burning Mouth Syndrome	20 (38.5%)	
• Symptomatic Oral Lichen Planus	14 (26.9%)	
• Atypical Odontalgia	10 (19.2%)	
• Persistent Idiopathic Facial Pain	8 (15.4%)	

Table 2
Prevalence of clinically relevant anxiety and depression.

Condition	Group	Positive Cases (%)	Chi-square p-value
Anxiety ($\text{HADS-A} \geq 8$)	Cases	84.6% (44/52)	<0.0001
	Controls	30.8% (16/52)	
Depression ($\text{HADS-D} \geq 8$)	Cases	80.8% (42/52)	<0.0001
	Controls	23.1% (12/52)	

Table 3
Group-wise comparison of mean scores.

Outcome	Cases (Mean $\pm$ SD)	Controls (Mean $\pm$ SD)	Mean Difference (95% CI)	p-value
OHIP-14 Score	28.3 ± 6	11.7 ± 5	16.6 (14.2–19.0)	<0.0001
HADS-Anxiety	10.2 ± 3	6.1 ± 2	4.1 (3.1–5.1)	<0.0001
HADS-Depression	9.1 ± 3	5.0 ± 2	4.1 (3.1–5.1)	<0.0001

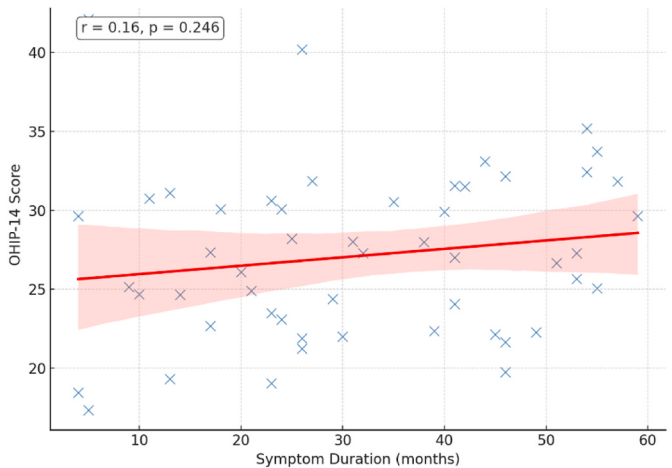


Fig. 1. Correlation with symptom duration and OHIP-14 scores (cases only).

Table 4
Comparison of OHIP-14, HADS-A, and HADS-D scores by specific diagnosis (within case group).

Diagnosis	OHIP-14 Mean $\pm$ SD	HADS-A Mean $\pm$ SD	HADS-D Mean $\pm$ SD
Burning Mouth Syndrome (n = 20)	30.2 ± 5.4	11.1 ± 2.8	9.8 ± 3.2
Symptomatic OLP (n = 14)	27.9 ± 6.0	10.3 ± 2.9	8.9 ± 2.7
Atypical Odontalgia (n = 10)	25.1 ± 5.6	9.4 ± 2.5	8.5 ± 3.0
Persistent Idiopathic Facial Pain (n = 8)	26.8 ± 6.2	9.1 ± 2.6	7.9 ± 2.8

within the case group. Patients with BMS exhibited the highest OHIP-14 (30.2 ± 5.4), anxiety (11.1 ± 2.8), and depression scores (9.8 ± 3.2). This was followed by those with symptomatic oral lichen planus. Although all subgroups reported elevated distress, BMS appeared to be the most psychologically burdensome, reinforcing literature that links BMS to underlying neuropathic and psychosomatic components.

3.6. Predictors of poor OHRQoL

In Table 5, multivariable regression revealed that both HADS-Anxiety ($\beta = +0.62$, 95% CI: +0.21 to +1.03, $p = 0.004$) and HADS-Depression ($\beta = +0.48$, 95% CI: +0.11 to +0.85, $p = 0.01$) were

Table 5
Linear regression: Predictors of OHIP-14 Score (cases only).

Predictor Variable	β Coefficient	95% CI	p-value
Age	+0.05	−0.09 to +0.19	0.49
Gender (Female)	+0.82	−1.3 to +3.0	0.46
Symptom Duration (months)	−0.08	−0.18 to +0.02	0.10
HADS-Anxiety Score	+0.62	+0.21 to +1.03	0.004
HADS-Depression Score	+0.48	+0.11 to +0.85	0.01

independent predictors of impaired oral health-related quality of life. In contrast, demographic variables such as age, gender, and symptom duration were not significant predictors. These findings emphasize that emotional distress, rather than symptom chronicity or demographic factors, is the dominant determinant of OHRQoL impairment in this patient population.

3.7. Diagnostic utility of OHIP-14 for depression

Fig. 2 presents the Receiver Operating Characteristic (ROC) curve evaluating OHIP-14 as a screening tool for detecting clinically relevant depression (HADS-D ≥8). The area under the curve (AUC) was 0.85, indicating good diagnostic performance. At a cut-off score of 22.5, the OHIP-14 yielded a sensitivity of 81% and specificity of 78%. These findings suggest that OHIP-14 could serve not only as a quality-of-life metric but also as a valuable screening instrument for underlying depressive symptoms in dental practice settings.

4. Discussion

Chronic oral mucosal pain disorders, including BMS, OLP, Atypical Odontalgia, and Persistent Idiopathic Facial Pain, significantly affect patients’ physical and psychological well-being. This study investigated their impact on OHRQoL, anxiety, and depression using validated tools (OHIP-14 and HADS) in a case-control design. Our findings indicate a substantial impairment in OHRQoL among affected individuals, with a concomitant rise in anxiety and depressive symptoms when compared to age- and sex-matched healthy controls.

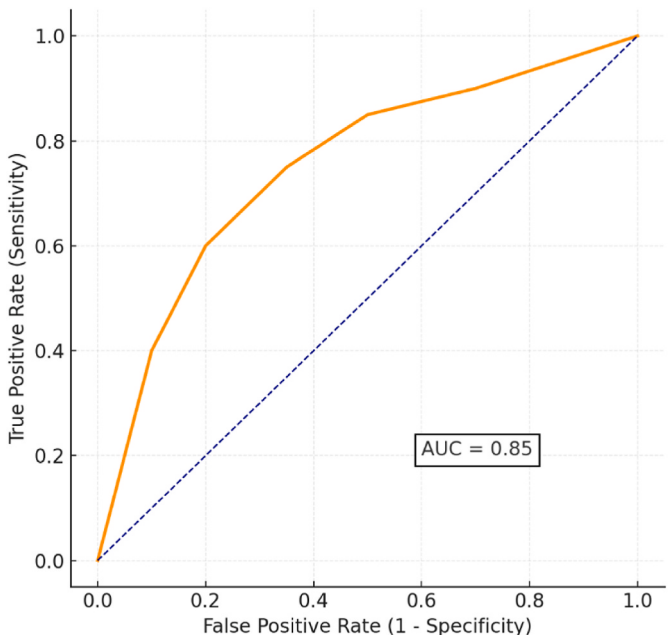


Fig. 2. ROC curve: OHIP-14 score predicting depression.

4.1. OHRQoL impairment in chronic oral pain disorders

OHIP-14 scores in our study were markedly higher in the case group than controls (mean 28.3 vs. 11.7, $p < 0.0001$), reflecting a significant deterioration in functional, psychological, and social aspects of oral health. These findings are consistent with previous reports of poorer OHRQoL among BMS patients—where OHIP-14 scores were significantly elevated across all domains, particularly in physical pain and psychological discomfort—compared to healthy controls.²¹

BMS, characterized by a chronic burning sensation in the absence of overt clinical abnormalities, is known to significantly impair oral health-related quality of life. In our subgroup analysis, BMS patients had the highest OHIP-14 scores (30.2 ± 5.4) among all diagnostic groups, followed by those with symptomatic OLP. This finding is supported by Choi et al., who reported markedly elevated OHIP-14 scores in patients with BMS—particularly within the psychological discomfort and physical pain domains—when compared to healthy controls, underscoring the severe psychosocial burden of the syndrome.²² These results underscore the complex and multifactorial nature of BMS, where neurogenic, hormonal, and psychological mechanisms interact to exacerbate patient suffering.

4.2. Psychological distress and comorbidity

An overwhelming majority of participants in the case group exhibited clinically significant levels of anxiety (84.6%) and depression (80.8%), which were markedly higher than those observed among controls (30.8% and 23.1%, respectively; $p < 0.0001$). This pronounced psychological burden underscores the complex biopsychosocial dynamics of chronic oral mucosal pain disorders. These findings are consistent with previous literature highlighting the high prevalence of mood disturbances among patients with persistent orofacial pain.

In particular, Burning Mouth Syndrome (BMS) has been extensively studied for its association with emotional distress. The absence of visible mucosal changes in BMS, despite persistent burning pain, adds to the diagnostic ambiguity and may exacerbate the psychological distress experienced by patients. Supporting this, a large-scale population-based cohort study by Kim et al. (2020) utilizing the Korean National Health Insurance Service data demonstrated that individuals with BMS had significantly higher risks of developing both anxiety (adjusted hazard ratio [HR] 2.42; 95% CI: 2.02–2.90) and depression (adjusted HR 2.77; 95% CI: 2.22–3.45) compared to age- and gender-matched controls.²³ These findings substantiate the bidirectional relationship between chronic oral pain and psychiatric morbidity, whereby psychological disorders may either contribute to the development of pain syndromes or emerge as a consequence of them.

In patients with Oral Lichen Planus (OLP), particularly those with erosive or symptomatic variants, emotional distress is markedly elevated, frequently manifesting as significant anxiety and depression. A recent systematic review and meta-analysis by De Porras-Carrique et al. (2022) reported high pooled prevalences of anxiety (54.8%) and depression (31.2%) in OLP patients, with both significantly more common than in healthy controls (anxiety: OR = 3.51; depression: OR = 6.15).¹² Our study aligns with these observations, as OLP cases also exhibited elevated HADS-A and HADS-D scores, underscoring the profound psychological burden associated with symptomatic OLP.

These associations highlight the role of chronic inflammation, altered nociceptive processing, and the psychosomatic cycle in oral mucosal pain disorders. Neuroinflammatory cytokines such as IL-6 and TNF-α, found in higher levels in both BMS and OLP patients, have also been implicated in mood disorders, suggesting a common biological pathway linking oral and psychological morbidity.²⁴

4.3. Lack of correlation with symptom duration

Interestingly, our study found no significant correlation between the

duration of symptoms and the severity of OHIP-14, anxiety, or depression scores. This suggests that the psychological impact is not necessarily cumulative or time-dependent, but may be driven by the perceived intensity of symptoms, coping strategies, or pre-existing emotional vulnerability. Comparable findings were reported by Adamo et al., who noted that the duration of symptoms in BMS did not predict the level of psychological distress or quality-of-life impairment.²⁵ This supports the need for early psychological screening irrespective of chronicity.

4.4. Diagnosis-specific differences in impact

Among all chronic oral mucosal pain disorders studied, BMS patients consistently reported the worst scores across all indices. This is congruent with the neurobiological understanding of BMS as a central pain disorder with altered trigeminal and insular cortex activity, often presenting with a significant emotional overlay.²⁶ In contrast, patients with idiopathic facial pain and atypical odontalgia, though distressed, had slightly lower anxiety and depression scores, possibly due to episodic rather than persistent symptoms.

In our study, BMS patients reported the highest OHIP-14 scores among all diagnostic subgroups (30.2 ± 5.4), followed by those with symptomatic OLP, reinforcing the pronounced quality-of-life impact associated with BMS. These findings are consistent with the work of López-Jornet et al., who demonstrated that individuals with BMS scored significantly lower across all domains of the SF-36—indicating poorer physical and psychological quality of life—when compared to healthy controls.²⁷

4.5. Predictors of poor oral Health-Related quality of life

Multivariate linear regression analysis revealed that both HADS-Anxiety and HADS-Depression scores were independent predictors of poor OHRQoL, while age, gender, and symptom duration were not statistically significant. This indicates that emotional distress has a more profound influence on perceived quality of life than demographic or clinical variables. Similar results were obtained by Sardella et al., where anxiety and depression scores strongly predicted OHIP-14 outcomes in BMS patients, independent of age or clinical severity.²⁸

These findings underscore the importance of integrating mental health evaluation into the diagnostic and therapeutic pathways of oral medicine clinics. Routine use of tools like HADS can aid in the early identification of patients who may benefit from psychological interventions alongside standard care.

4.6. OHIP-14 as a screening tool for depression

An innovative aspect of our study was the use of OHIP-14 scores to predict the presence of clinically relevant depression. The ROC analysis demonstrated good discriminative ability ($AUC = 0.85$), with a cut-off score of 22.5 yielding 81% sensitivity and 78% specificity. To our knowledge, this is one of the first applications of OHIP-14 as a potential mental health screening tool in oral medicine populations.

A similar approach was taken by Sekiguchi et al., who demonstrated in a community-dwelling Japanese population that high psychological distress was significantly associated with poorer oral health-related quality of life, as measured by OHIP-14, highlighting the instrument's potential to capture mental health burdens alongside oral health status.²⁹ Our findings reinforce the multidimensional nature of oral health and support the use of OHIP-14 in routine clinical screening, not only for functional limitations but also for latent mood disorders.

4.7. Clinical and public health implications

This study provides robust evidence for the intertwined nature of chronic oral mucosal pain, quality of life impairment, and psychological comorbidity. Oral healthcare providers should consider psychological

screening an integral component of management. Early referral to mental health professionals, use of cognitive behavioral therapy, and multidisciplinary care models may improve outcomes.

Furthermore, our findings support the inclusion of OHIP-14 and HADS in oral medicine practice not only as outcome measures but also as tools for triaging patients needing mental health support.

4.8. Strengths and limitations

This study has several notable strengths. It is among the few to comprehensively evaluate the interplay between oral health-related quality of life (OHRQoL) and affective symptoms in patients with chronic oral mucosal pain disorders using validated tools (OHIP-14 and HADS). The inclusion of a well-matched control group enhances internal validity, and the use of regression and ROC analyses provides insights into the predictive potential of OHRQoL scores for mental health screening. Additionally, the diagnostic diversity within the case group allows for exploratory comparisons across specific conditions like BMS, OLP, and atypical odontalgia. However, certain limitations should be acknowledged. The cross-sectional design precludes causal inference regarding the temporal dynamics between psychological distress and chronic oral pain. The reliance on self-reported data for anxiety and depression, although based on validated instruments, may still be subject to reporting bias. Furthermore, the single-center nature of the study may limit the generalizability of findings to broader populations. Future longitudinal and multicentric studies incorporating biological markers (e.g., salivary cortisol or inflammatory cytokines) could further elucidate the biopsychosocial mechanisms underlying these associations.

5. Conclusion

This case-control study demonstrates that chronic oral mucosal pain disorders significantly impair quality of life and are strongly associated with anxiety and depression. BMS, in particular, is associated with the highest psychological burden. Anxiety and depression are independent predictors of OHRQoL, highlighting the need for integrated psychological assessment in oral medicine. The OHIP-14 score may serve as a useful screening tool to identify patients at risk of depression in dental clinics. These findings call for a paradigm shift in the management of chronic oral pain—one that transcends pharmacological and local therapy and embraces biopsychosocial care.

Author's contribution

All authors contributed substantially to the conception and design of the study. Dr. Nancy Jidiya and Dr. Shikhar Daniel led the study supervision and critically revised the manuscript. Dr. Anulatha Manne and Dr. Santosh R. Patil contributed to methodology, statistical analysis, and data interpretation. Dr. Sravanthi Ennala, Dr. Krishnapuram Akshita, Dr. Dhanashree Kamble, Dr. Riya Anand, and Dr. Isha Patel were involved in patient recruitment, data collection, literature review, and manuscript drafting. All authors reviewed and approved the final version for publication.

Ethical considerations

Written informed consent was obtained from all participants. The study protocol was approved by the Institutional Ethics Committee of Shri Guru Gobind Singh College of Dental Sciences and Research Centre (IEC No.: SGGSCDSR/Dean/Res/22/06) and conducted in accordance with the Declaration of Helsinki. Participant confidentiality and anonymity were maintained throughout the study.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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